



Multi-temporal InSAR monitoring of landslides in a tropical urban environment: focus on Bukavu (DR Congo)

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The western branch of the East African Rift System, in Central Africa, is characterized by the presence of several geohazards: earthquakes, volcanoes, and landslides. Every year, landslides cause fatalities, structural and functional damage to infrastructure and private properties with serious disruptions of the organization of societies and severe impact on the populations.

These impacts are particularly important in the city of Bukavu (DR Congo) located within the Rift, on the southern shore of Lake Kivu. Large slow-moving landslides continuously affect highly populated slopes in the city. However little is known about their actual kinematics and the processes at play. Here we use multi-temporal InSAR technique to monitor these ground deformations. Using 50 Cosmo-SkyMed SAR images, acquired between March – October 2015 with a revisiting time of 8 days (ascending and descending orbits), we produce displacement-rate maps and ground deformation time series using the PS technique. Movements with a velocity $>5\text{cm/yr}$ are detected, which is consistent with field observations. DGPS measurements, taken at 21 benchmarks in the area during the same period, allow validating the results. Similar ground deformation rates are found for the period 2002-2008 using Envisat ASAR images. Furthermore, comparison with rainfall monitoring data acquire on site should help us to understand the influence of water and the tropical seasonality in the slide mechanisms.